

OPERATIONTM APOCALYPSE



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If you are using DOS 3.3, you must use a 13-sector scratch disk when saving data files. This disk must be initialized prior to use.

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1.0 INTRODUCTION

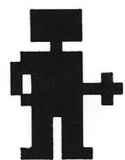
OPERATION APOCALYPSE is an operational level game made up of four scenarios. Each scenario represents a battle on the western front between the Allied and German forces in 1944-45. An 18 x 7 hexagonal grid map, representing 1 mile per hex, is used to regulate movement and resolve combat. Each turn represents about 4 hours of real time with each 5th move representing a complete night. A Terrain Effects Table (see 4.1) summarizes how the features on the map affect movement and combat of the units. Tables have also been provided (see 16.0) to explain in detail the system of combat, although the computer automatically calculates, displays and implements combat results as they occur. Only legal moves will be displayed and accepted so the details involved in movement and combat could be studied as play proceeds, with the player(s) consulting the rules as the need arises.

2.0 GETTING STARTED

The Allied Forces are set up on the left hand side of the map (as the player faces it) with the German Forces on the right. In solitaire play the computer controls the German Forces.

2.1 Unit Types

ALLIED



ENGINEER BATTALIONS



TANK BATTALIONS



INFANTRY BATTALIONS



ARTILLERY BATTALIONS

GERMAN



PARATROOP UNIT



PLANE



FLAK EMPLACEMENT



LANDING CRAFT



BUNKER

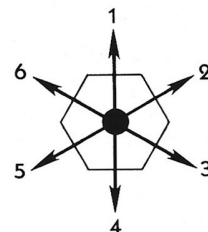


ANTI-TANK EMPLACEMENT

2.2 Command Keys

All commands in the game are made by hitting a single key. The keys 1 to 6 control movement and change a unit's mode during the respective phases. Eight other keys also affect the game in various ways. They are:

- the (A)bort key (see 7.2)
- the (C)ombat Pause key (see 6.4)
- the (F)ast Move key (see 4.4)
- the (L)ease key (see 4.3)
- the (P)ause key (see 4.5)
- the (R)edeploy key (see 10.1)
- the (S)ingle Step key (see 3.2)
- the (T)errain key (see 4.6)



Two keys that are also used to control the game are:

the space bar (SPC) which is used to exit from any situation. During the mode change phase it will leave the unit's mode unchanged and during other phases it is used to fire artillery and position drop zones.

the "Y" key which, if a question is asked (such as "do you wish to advance (y) ?"), stands for Yes. Any other key will mean No.

2.3 Unit Modes

Each unit in the game can be in any one of six modes. These modes are outlined below with the sections where each mode is described in detail.

Tank Battalions

Mode	Code	Movement	Section
1. Defense	DEFN	0	6.0
2. Normal	NORM	7	4.0
3. Transport	TRAN	10	4.0
4. Fire	FIRE	0	7.0
5. Attack	ATTK	1	6.0
6. Reorganization	REOR	0	11.0

Infantry Battalions

Mode	Code	Movement	Section
1. Defense	DEFN	0	6.0
2. Normal	NORM	4	4.0
3. Transport	TRAN	6	4.0
4. River	RIVR	1	4.0
5. Attack	ATTK	1	6.0
6. Reorganization	REOR	0	11.0

Artillery Battalions

Modes BUNK, FLAK and ANTI indicate special artillery units.

Mode	Code	Movement	Section
1. Bunker	BUNK	0	7.0
2. Normal	NORM	0	4.0
3. Transport	TRAN	4	4.0
4. Fire	FIRE	0	7.0
5. Flak	FLAK	0	7.0
6. Anti-tank	ANTI	0	7.0

Engineer Battalions

Mode	Code	Movement	Section
1. Defense	DEFN	0	6.0
2. Normal	NORM	4	4.0
3. Transport	TRAN	6	4.0
4. River	RIVR	1	4.0
5. Attack	ATTK	1	6.0
6. Bridging	BRDG	1	12.0

During the mode change phase a player will be given the option of changing a unit's mode. The possible modes a unit can go into are indicated in inverse. A unit can always stay in the mode that it is in. Basically, if a unit is in normal mode it can go into any other mode, and from any other mode to normal.

Special artillery units cannot move or change mode during the game.

2.4 Starting Up

Insert the disk in drive #1 and turn on the computer. Users without Autostart will have to boot the disk manually. The menu will appear, listing the game options. By hitting the appropriate keys the player(s) can set up a scenario. By selecting the AUTO function and starting the game the player(s) can watch the computer play itself. This is a useful way to become familiar with the features of the game.

2.5 Game Equipment

The contents of this game include:

- 1 box
- 1 rule book
- 1 5¼" game disk
- 2 mapboard cards
- 1 game selection card
- 4 colored pens

3.0 SEQUENCE OF PLAY

Each scenario is played in Game-Turns, each of which consists of two Player-Turns (one Allied and the other German), plus an initial setup phase (which depends on scenario). The Allied player moves first in all scenarios. The player whose Player-Turn is in progress is termed the Phasing player.

3.1 Initial Set-up

The German player deploys his on-board units.

The Allied player is then requested to assign drop zones, deploy units on the board and specify beach landing hexes depending on

scenario (see 15.0).

In scenarios 3 and 4 an initial "softening up" barrage arrives at the end of this phase.

3.2 The "S" key

When setting up on the board the flashing cursor will move quickly around the board by using the movement keys. The cursor will move in the direction indicated until another key is hit. (SPC) will indicate that the cursor is over the desired hex. If the "S" key is hit the cursor can then be single-stepped into position and deployed with (SPC).

3.3 Allied Player-Turn

Artillery Arrival Phase

Artillery plotted in the previous turn arrives and the results are implemented.

Artillery Plotting Phase

Artillery is plotted for arrival in the next turn.

On-Board Artillery Phase

The Allied player can then fire artillery units that are in NORM or FIRE mode, or Tank units that are in FIRE mode.

Reorganization Phase

All units that are in REOR mode will be reorganized according to the restrictions in section 11.0.

Mode Change Phase

The Allied player can change the mode of units, excepting ARTY units that fired in the previous artillery fire phase.

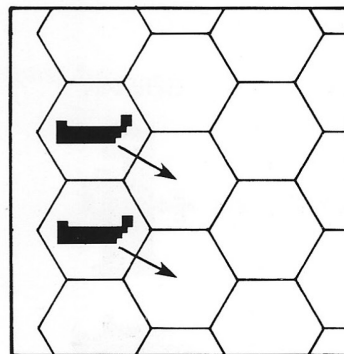
Paratroop and seaborne troops cannot change mode until they become organized.

Special ARTY units cannot change mode.

Landing Phase

Paratroop units that are scheduled to arrive in this turn land at pre-determined drop zones.

Seaborne units will land, if possible, on their assigned hexes. Units land in ATTK mode (excepting Artillery units which land in NORM mode).



Seaborne units depart from landing craft in direction 3.

Seaborne units that are due to arrive this turn can now be deployed. Non-commando units must be assigned to beach hexes.

Paratroop units will then attempt to organize.

Movement Phase

The Allied player can now move units on the map that have a movement allowance of 1 or more. Combat takes place during this phase.

3.4 German Player-Turn

The German player now repeats the Phases outlined in 3.3 except that the German player does not have a Landing Phase.

At the end of each Game-Turn the players will be asked if they wish to save the game or continue.

4.0 MOVEMENT

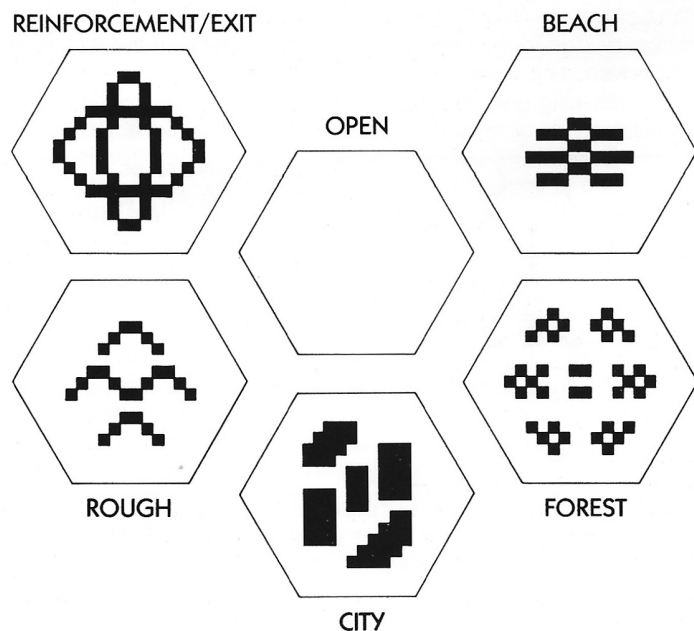
During a Movement Phase, the Phasing Player may move as many or as few units as he desires. Each unit has a number of Movement Points (MP) that may be expended in various ways during the phase (see 2.3). If the unit expends all its movement points at any time during the phase the computer will advance to the next unit. Any unit that enters an enemy controlled hex during a non-night move will stop and must attack, if possible. Movement of any unit can be terminated at any time by hitting the space bar (SPC). Units in TRAN mode have an increased movement allowance but are more vulnerable to combat losses. This represents the ability of a unit to take advantage of roads and trails in any area. Units in NORM mode are in a state of readiness and can quickly change mode to deal with any given situation. During the movement phase the following information is displayed on the screen.

TYPE of unit	NUMBER of unit
MODE	MOVEMENT
REOR value	STRENGTH
VICTORY point total	RESISTANCE indicator

If the REOR value or VICTORY total are zero they will not be displayed.

4.1 Terrain

The following are the types of terrain in the game.



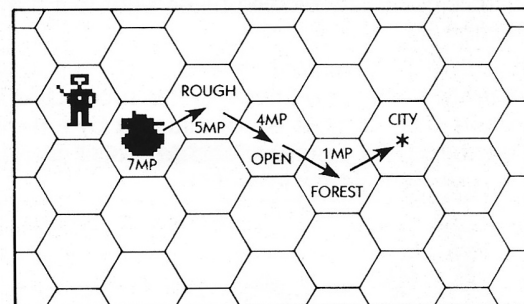
Reinforcement/Exit	costs 1 MP	combat bonus 0
Open	costs 1 MP	combat bonus 0
Beach	costs 2 MP	combat bonus 0
Rough	costs 2 MP	combat bonus 1
City	costs 2 MP	combat bonus 2 (only Infantry and Engineer units)
Forest	costs 3 MP	combat bonus 2

A unit with 1 MP can move into any legal adjacent hex. Once a unit has entered a hex its movement allowance is reduced and movement will be terminated if it has no MP left.

A unit in an enemy controlled hex has 3 MP subtracted from its movement allowance, except during night turns when 1 MP is subtracted.

Example 1.

A tank in TRAN mode, movement allowance 10 MPs, moves to the city through varying terrain. 3 MPs are subtracted as it is in an enemy controlled hex. The remaining MPs are subtracted as it moves.



4.2 Movement Restrictions

A unit may not enter a hex occupied by another unit.

A unit may never enter an all-sea hex other than in the Landing Phase.

Seaborne units must land on beach hexes (ENGN units may land on any hex). Only units in RIVR mode may cross rivers at any place other than at bridge hexsides.

Unless it is a night turn a unit will stop if it enters an enemy-controlled hex.

If at any time, the unit's movement allowance is reduced below 1, its movement phase is terminated.

An Artillery unit which fires during the Artillery phase may not move that Player-Turn (Tank units which fire in the Artillery phase may move that turn).

4.3 The "L" key

During a movement phase a player may (L)ease any unit(s) until all other units are moved. This results in a double movement phase and allows a player to clear units from important hexes before moving other units up. A left unit will never panic.

4.4 The "F" key

By pressing the "F" key during a movement phase the units will move faster. This process will be reversed if the "F" key is hit a second time.

4.5 The "P" key

By pressing the "P" key during the movement or mode change phases the computer will stop (and display the word "pause" on the screen) until another key is pressed.

4.6 The "T" key

During the movement and mode change phases a player can hit the "T" to see the terrain. All units, except units that have been left with the "L" key or paratroop units, will be replaced by the terrain symbols. Any other key will then reverse the process and play can continue.

4.7 Panic Movement

Each player has a panic level of 10%. This means that each unit has a 10% chance it will move automatically. If a unit panics during the movement phase the computer may move it in any direction. It will obey all the normal restrictions for movement and combat. A unit which is left (using the "L" key) will not panic. Only units with a positive movement allowance can panic. This represents the normal chaotic situation on a battlefield where the best laid plans can go astray.

4.8 Night Movement

During a night turn (each fifth turn) only 1 MP is subtracted when a unit is in an enemy controlled hex. Also combat will only be initiated on the completion of a unit's turn if it ends the phase in an

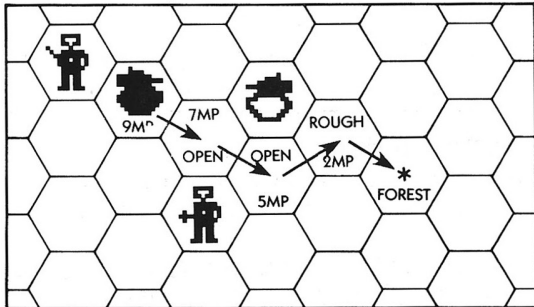
enemy controlled hex. This allows infiltration tactics to be used during these turns.

There is no artillery phase during a night turn.

There is no artillery plotting phase prior to a night turn.

Example 2.

A tank unit, movement allowance 10 MPs, moves at night to infiltrate the enemy lines. 1 MP is subtracted in addition to terrain cost. Combat is not initiated by entering an Enemy-Controlled Hex. Combat need not occur unless the unit ends its movement phase in an ECH.



5.0 ZONES OF CONTROL

The six hexes immediately surrounding a unit constitute that unit's zone of control.

Any Enemy unit that is in a Friendly zone of control, if hidden, will become visible.

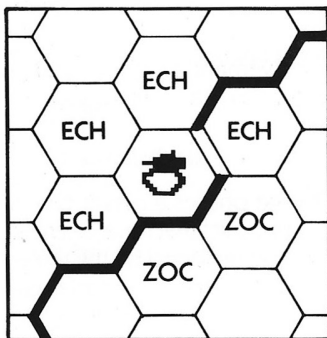
If an enemy unit is forced to retreat into a friendly zone of control it will sustain additional losses.

5.1 Enemy Controlled Hexes

A hex that is adjacent to an enemy unit BUT DOES NOT HAVE AN INTERVENING RIVER HEXSIDE is classified as an Enemy Controlled Hex. Only a unit in an enemy controlled hex may engage in combat.

Units in an enemy controlled hex will have their movement allowance reduced at the start of their movement phase.

Example 3



If a unit is in an Enemy Controlled Hex, it has its movement allowance reduced and can engage in combat. A Zone of Control (ZOC) only affects sighting and retreat results.

5.2 Sighting

If a hidden unit moves into a zone of control, or a unit moves into a hidden unit's zone of control, the unit will become visible. It can then continue to move according to the normal restrictions.

5.3 Stacking

Only one unit can occupy a hex at any time. There are no exceptions.

6.0 COMBAT

When friendly units enter an enemy controlled hex, combat is initiated (exception 4.8). The computer resolves the combat taking into account terrain, unit strengths, adjacent friendly and

enemy units, modes of attacker and defender, and the types of units engaged. The results are then implemented. (This procedure is explained in detail in section 16.0)

6.1 Which Units May Attack

Artillery units may never engage in combat.

Only units that are in NORM, TRAN and ATTK modes may attack during the combat phase.

Units attacking while in ATTK mode cause the losses to both attacker and defender to be doubled.

Any unit attacked in ATTK, REOR or BRDG mode, or any ARTY unit, has all losses doubled.

These effects are cumulative. A unit in ATTK mode attacking an ARTY unit will suffer doubled losses while the defender will suffer quadrupled losses.

6.2 Combat Resolution

After combat has been resolved there can be three results:

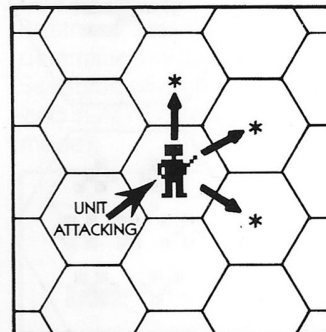
- 1) Both units can suffer step losses.
- 2) The defender can be forced to retreat (only if the attacker is in ATTK mode)
- 3) The attacker and/or defender may be eliminated.

Play will then continue unless the defender has been eliminated or forced to retreat, in which case the attacker has the option to advance.

6.3 Advances and Retreats After Combat.

Only an attacking unit has the option to advance after combat (this can be caused either by the attacker being in ATTK mode forcing a retreat or due to the defender being eliminated). If the attacking unit advances it will restart its combat phase.

If the attacking unit decides not to advance it will continue the combat phase normally.



Retreating unit must move away from the attacking unit.

A unit may only advance once per movement phase.

If a unit refuses to advance at one point during its combat phase it may advance at a later time.

Any Enemy unit that is forced to retreat must obey the following restrictions:

It cannot cross a river hexside, except at a bridge.

It must retreat away from the attacking unit (see example).

If it is forced to retreat into a friendly zone of control it will suffer additional losses.

A unit with a movement allowance of 0, such as a unit in DEFN mode, will not retreat but sustain additional losses.

When combat takes place certain results are displayed on the screen. The type and mode of the attacked unit are given as well as the strength and resistance the unit is giving.

The strength is LIGHT if it is under 9 strength points, MEDIUM, 9 to 14 strength points and HEAVY, 15 points and above.

The resistance is LIGHT if it is resolved on columns 9 to 12, MEDIUM, columns 5 to 8, and HEAVY, columns 1 to 4 (see 16.0).

6.4 The "C" key

If, during the movement phase, the "C" key is hit then when any

combat results are displayed, the computer will pause, and display the "pause" sign, until another key is hit. The combat pause can be turned off by hitting the "C" key a second time.

7.0 ARTILLERY

Each player receives a given number of off board artillery points for each scenario. As well as this, he has artillery units which he can deploy on the board for additional firepower. Off board artillery must be requested on one turn for arrival on the next. There is no artillery phase on a night turn.

7.1 Off Board Artillery

At the beginning of each player's movement phase the artillery plotted the previous turn arrives. The results are then applied although no immediate indication of damage (other than elimination) is presented to the player(s). There is no off board artillery plotting phase prior to a night turn.

In scenarios 3 and 4 a pre-game barrage takes place automatically. The Allied player may only call down artillery in the first 8 hexrows (inclusive).

The German player may call down artillery on the 11th to 18th hexrows.

7.2 The "A" key

If you wish to terminate the artillery plotting phase at any point you can hit the (A) key. This will stop any further plotting although values plotted until then will not be changed. This key can also be used in a similar fashion to abort the on board artillery and mode change phases.

7.3 On Board Artillery

Normal artillery units have a range of 6 hexes (6 miles). To fire during the fire phase the player moves the flashing symbol above the target hex, using the movement keys, and hits the space bar (SPC). Results will be applied immediately. The artillery unit can fire on any hex within range except for a hex that is not sighted (see 7.4).

To indicate that a unit does not fire, the player must hit the space bar (SPC) when the cursor is above the firing unit. The computer will then move on to the next unit. If a unit does not fire it may change its mode during the mode change phase.

If an ARTY unit is in hidden mode then the flashing cursor, which normally appears during the artillery phase, will only appear once the cursor has been moved from the hidden unit (using one of the movement keys).

A tank unit in FIRE mode is treated as an artillery unit with a range of 2 hexes. A tank unit which fires during an artillery phase can change its mode and move in the same phase.

7.4 Artillery Sighting

An artillery unit may only fire on a hex that is at most two hexes from a friendly unit. If the player tries to fire at a hex that is not sighted a notice will appear and the player will be given the flashing symbol to position again.

7.5 Special Artillery Units

The German player has a number of special artillery units that can be used in various scenarios. These consist of Bunkers, Flak emplacements and Anti-Tank emplacements. Bunkers and Anti-Tank guns have a range of 2 hexes and Flak guns, 6 hexes.

Bunkers have a strong defensive value.

Anti-Tank guns cause doubled losses to Tank units.

Flak guns can fire on Paratroop units (causing double losses) up to a range of 6 hexes. They may also fire on any other unit that is adjacent. If an attempt is made to fire on any other type of unit at a

range greater than 1 then the "hex not sighted" sign will come on and the cursor will have to be re-positioned.

7.6 Combat Resolution

Combat is resolved taking into account the strength of the incoming barrage, the terrain the target unit is in, the mode and type of the attacked unit. (see 16.0)

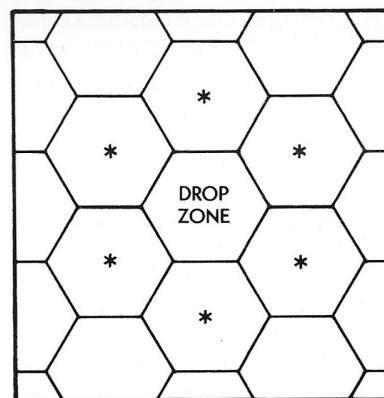
8.0 AIR OPERATIONS

In scenarios 2, 3 and 4 the Allied player has paratroop units to deploy. He does this by specifying drop zones and the computer then lands the units at the time specified by the scenario. All drop zones must be specified before the game begins. At the beginning of a player's movement phase the paratroop units will try to organize. If they succeed they will appear as normal units in TRAN mode. Paratroopers automatically organize themselves on their second turn in the game.

8.1 Drop Zones

The Allied player positions the flashing symbol over the hex he wishes to specify as a drop zone. The computer will then try to land the units on, or adjacent to, the drop zone. If there is no landing hex available then the landing will be made at random on the map.

Paratroop units cannot stack or land on enemy units.



*Indicates possible landing sites around the designated drop zone for paratroop units.

8.2 Terrain Effects

When airborne units land they suffer losses. If they land on reinforcement, open or beach hexes they can suffer minor losses. In rough hexes the losses are heavier but bearable. Take the advice of the author and do not land in forest or city hexes. No unit can land off the board or in an all-sea hex. Air units do not retreat when attacked by a unit in ATTK mode but instead suffer additional losses. (see 16.0)

9.0 REINFORCEMENTS

Reinforcements may arrive during a player's movement phase as specified in each scenario. All units arrive on the board in transport mode and can move and engage in combat normally.

When a unit arrives as a reinforcement a player is given the option of accepting it in hidden mode. In scenario 4 the player must do this during the Initial Setup Phase. The computer in solitaire mode will not spot hidden units.

9.1 Reinforcement/Exit Hexes

Units will normally arrive on a reinforcement hex at the time specified by the scenario (which may be random). If the hex is occupied the unit will not arrive but be rescheduled for arrival the next turn. If a rescheduled unit still cannot enter on the assigned

hex it will be reassigned to a hex that is unoccupied but close to the original arrival hex.

9.2 Exited Units

In some scenarios the Allied player may have to exit units to satisfy victory conditions. Only the Allied player may exit units from the board. The units must be exited from reinforcement/exit hexes. The player only has to end his movement phase on that hex and the computer will ask if the unit is to be exited. In scenario 3 exited units may be requested, in the Allied player's mode change phase, to come back as reinforcements in the next movement turn. The unit will then arrive in the condition it exited except that it will now be in transport mode.

10.0 HIDDEN UNITS

When a player deploys his units on the board during the Initial Setup Phase he may deploy them in hidden mode.

The unit will be redeployed, exposed, if it is in an enemy zone of control. In scenario 4 the German player may request, during the Initial Setup Phase, that the reinforcements arrive in hidden mode. The player has the option of hiding any reinforcement that enters the board.

10.1 The "R" key

During the movement or mode change phase the phasing player may hit the "R" key to expose a hidden unit. Once exposed it may not be hidden again and remains exposed for the rest of the game.

NOTE: In the solitaire version the computer uses hidden movement in levels 1 and 3 and, unlike the two-player version, can deploy and redeploy at will (as long as there are no adjacent Allied units).

11.0 REORGANIZATION

Tanks and Infantry units reorganize by entering the REOR mode. At the beginning of a player's turn all units in REOR mode will attempt to reorganize.

Each unit has a reorganization value which depends on the scenario. The unit will receive an increase in strength of one half of its reorganization value rounded up. The unit will always gain at least one strength point when it reorganizes.

If a unit enters a turn in an enemy controlled hex it will not reorganize.

Units in REOR mode receive doubled losses during combat resolution.

The reorganization value of a unit is displayed on the screen during the mode change and movement phases.

Example 4:

An INFN unit with a strength of 10 and a reorganization value of 7 is placed in REOR mode for 5 turns. On the first turn his strength is unchanged. It then increases (as long as there are no adjacent enemy units).

TURN	1	2	3	4	5
STRENGTH	10	14	16	17	18
REOR VALUE	7	3	1	1	1

The value added to the unit each time is half of its REOR value plus one (rounded down). A unit which begins with a reorganization value above zero will never have its reorganization value reduced below 1.

NOTE: A reorganization value of 10 will cause a unit's strength to go up by 6 (not 5). That means there are 4 reorganization points left for the following turn.

12.0 BRIDGING

Engineer units may enter BRDG mode and begin constructing a river crossing. There are three possible outcomes:

- 1) Bridge constructed. (River hexside becomes bridge hexside.)
- 2) Bridge under construction. (Nothing happens.)
- 3) No bridge possible. (The unit is not near a river, in which case the unit will be put back in NORM mode and the player can then change the unit's mode again.)

Once a bridge is constructed it will operate like a normal bridge until an enemy unit moves adjacent to it, in which case the bridge will automatically revert to a river hexside (be demolished).

NOTE: Protect your bridges!

13.0 SAVING THE GAME

At the end of each Game-Turn the player(s) will be given the option of saving the game. If the game is to be saved at that point, hit the "Y" key and follow the instructions that appear. You will need to have an initialized 13-sectored (DOS 3.2) disk to save the game on.

13.1 Restarting the Game.

When the menu first comes up a saved game can be restarted by hitting the appropriate key and following instructions. If the restart is on at the start, all other options are ignored as all the information will be in the saved file.

14.0 SOLITAIRE VERSION

If a player chooses the solitaire option then the computer will control the German forces.

14.1 The Level Structure

There are 4 levels of computer play. They are:

- level 1: advanced strategy — hidden units
- level 2: advanced strategy — exposed units
- level 3: simple strategy — hidden units
- level 4: simple strategy — exposed units.

Level 1 is the hardest level.

Level 4 is the easiest.

14.2 The Computer Sequence of Play

The computer follows the ordinary sequence of play with the combining of the mode change and movement phases.

NOTE: The Allied player will be asked to deploy his drop zones, etc., before the computer sets up. This reverses the normal sequence.

The computer will only use information that would be available to the German player in the two-player version so that hidden units, drop zones, etc., are not used to decide tactics.

The sequence is:

- Artillery Arrival Phase
- Artillery Plotting Phase
- Reorganization Phase
- Strategy Phase
- On Board Artillery Phase
- Movement & Mode Change Phase

14.3 Basic Computer Strategy

During the strategy phase the computer acts in the role of a German general giving overall orders to units on the map. In the movement phase the units will carry out these orders unless local conditions and combat results that have occurred cause a change

in strategy. This can cause the units to behave independently, and even panic. The panic system often produces the best results.

15.0 SCENARIOS

Each scenario represents a battle that occurred on the western front in World War II. The computer provides a certain amount of randomness in each scenario so that the player(s) will find each game challenging, not knowing exactly what to expect.

The chart provided with the game gives details on:

- the number and strength of units on each side,
- the amount of artillery each player has,
- the victory conditions for each scenario.

15.1 Advance to Contact

A valley has become a keypoint in the Allied advance. Units are dispatched to take the towns and hold them before the German player can organize and set up defensive positions that would hold back the advance. The German forces have quickly seen the opportunity to hold back the Allies and have also sent units to the area.

This is the only scenario in which balanced forces are pitted against each other. The objective is to take and hold the towns on the map.

15.2 Bridgehead

The Allies are planning a breakthrough that will send forces tearing through the heartland of Germany, but the plan depends on their taking and holding bridges over vital rivers. Four airdrops are planned to hold these objectives until the ground forces can arrive. Unknown to the Allies, the Germans have significant forces in the area, including a tank division, but the German forces must react quickly if they are to stop an Allied victory.

15.3 Invasion

Fortress Europe awakens to a new day and an opening barrage from the invasion force that has moved into position during the night. Airborne troops have already been dropped behind the lines to break the communication lines of the German forces as the first landing craft hits the beach. The Allies must quickly establish a beachhead. Units must be dispatched north and south to secure the area. The German forces cannot hope to throw the Allies back into the sea with the units they have available, but they can stop the Allies from establishing themselves inland and, if they can delay long enough, the German reinforcements will arrive.

15.4 Highway

The Allies have decided to attack in a knifescroke that will leave the German forces broken. To succeed they must move quickly up the road to meet the airborne troops that have been dropped behind the lines. To win they must exit units to the north while keeping the supply route open. The German task is simply to cut the road and starve the units in the north of supplies, perhaps forcing them to return to open the road. Scenarios 2 and 4 represent the same battle from two viewpoints. The Allied army in scenario 4 had to move quickly to link up with the air units which were holding bridges, in scenario 2, well to the north.

16.0 COMBAT RESOLUTION TABLES

Combat is resolved by calculating a basic odds based on the strengths of the attacker and defender and then shifting that result due to certain factors. The following tables are used to do this:

Combat Resolution Table

COLUMN	1	2	3	4	5	6	7	8	9	10	11	12
DICE	1:5-1:4	1:3-1:2	1:1-2:1	3:1-4:1	5:1-6:1	7:1-8:1						
-1-	1 / 1	1 / 1	1 / 0	2 / 0	3 / 0	3 / 0						
-2-	0 / 2	1 / 1	1 / 1	2 / 1	2 / 0	2 / 0						
-3-	0 / 2	0 / 1	1 / 1	1 / 0	/ 0	/ 0						
-4-	0 / 2	0 / 1	0 / 0	1 / 1	2 / 1	2 / 0						
-5-	0 / 3	0 / 1	0 / 1	1 / 1	1 / 1	2 / 0						
-6-	0 / 3	0 / 2	0 / 1	0 / 1	1 / 1	2 / 1						
---HEAVY--- ---MEDIUM--- ---LIGHT---												

Odds lower than 1:5 are treated as 1:5 and odds greater than 8:1 are treated as 8:1. The figure on the left indicates the number of defender strength points lost and the figure on the right indicates the number of attacker strength points lost.

Mode Shift Table

UNIT	TANK	INFN	ARTY	ENGN
MODE				
-1-	2	2	2	2
-2-	1	0	0	1
-3-	0	-1	-2	-1
-4-	-1	-3	-2	-2
-5-	2	1	-2	2
-6-	0	-2	1	-2

Attack Shift Table

UNIT ATTACKING	TANK	INFN	ENGN
UNIT DEFENDING			
-TANK-	0	-2	-1
-INFN-	3	0	1
-ARTY-	2	0	1
-ENGN-	1	-1	0

Note: ARTY units cannot attack.

16.1 Combat Procedure

When a friendly, attacking unit has combat with an enemy, defending unit the following procedure is carried out.

First, the attacking unit is given a shift factor (based on steps 1 to 4) and strength factor THAT WILL BE USED IN ALL COMBATS THAT PHASE (unless an advance takes place).

Second, each defending unit has its strength and shift calculated and combat takes place.

STAGE 1: The friendly unit has its attack strength calculated, which will be used in all combats that phase.

- 1) in city: shift +2 (INFN/ENGN only)
- 2) in rough: shift +1
- 3) in forest: shift +2
- 4) each additional adjacent (to the attacking unit) enemy unit: shift -2

This is the basic shift factor that is used. Now for each combat, the following is carried out for each enemy unit:

STAGE 2:

- 5) in city: shift -2 (INFN/ENGN only)
- 6) in rough: shift -1
- 7) in forest: shift -2
- 8) each additional adjacent (to the defending unit) friendly unit shift: +2
- 9) add the difference in the Mode Shift Table
- 10) add the Attack shift

Steps 5 to 10 are recalculated for each attack.

If there is an advance the whole procedure is restarted.

A retreat will occur if the attacker is in ATTK mode and the dice + column table add to 11 or more.

Example:

A Tank unit (strength 15) in NORM mode and in open terrain attacks an Infantry unit (strength 6) in DEFN mode in a forest hex. There is one other friendly unit adjacent to the Infantry unit.

Initial odds $15/6 = 2.5$ or 2:1 odds (column 6).

The shift factor is

- 2 : enemy in a forest hex
- +2 : adjacent enemy unit
- +1-2 : difference on Mode Shift Table
- +3 : Attack shift

+2 : Basic shift for this attack.

Combat is therefore resolved on the 4:1 (or 8th) column.

If the Dice roll was a three then the Tank unit will lose no strength point and the Infantry unit, 1 strength point.

16.2 Artillery Procedure

- 1) basic artillery strength is calculated as a random number between 0, and the unit's strength divided by 5
- 2) subtract mode shift of unit
- 3) add 2 (except for tank units)
- 4) in rough -1
- 5) in forest -2
- 6) in city -2 (INFN/ENGN only)

The value is then subtracted from the unit's strength.

Anti-tank units cause losses by tank units to be doubled.

Example:

An Artillery unit (strength 18) fires on an Infantry unit in NORM mode in a rough hex.

First a number is taken at random between 0 and 3 ($18/5 = 3.6$ rounded down to 3). Take 2 for this example.

Subtract 0: mode of unit

Add 2: not a tank unit

Add -1: in rough terrain

Therefore the unit loses 3 strength points.

16.3 Airlanding Losses

- 1) all terrains: lose 0 to 3 points
- 2) rough: lose additional 0 to 3 points
- 3) forest: lose additional 3 to 6 points
- 4) town: lose additional 3 to 7 points.

16.4 Retreat Losses

- 1) into zone of control: lose 2 to 4 points

- 2) additional damage due to movement of 0 when forced to retreat (DEFN mode, paratroopers, etc.): lose 2 to 4 points
- 3) unable to retreat: unit eliminated

17.0 BASIC TACTICS

Look carefully at the victory conditions required for each scenario. It is not wise to enter the board, put the units in ATTK mode and just blast away. There will be very few units left by the 10th turn. Make good use of the terrain (which can be used for attack and defense). Choose when to attack. Night moves can be convenient in getting weak units out of the front line and replacing them with stronger units. Reorganize Tank and Infantry units. Do not over-commit your forces.

18.0 DESIGNER'S NOTES

Operation Apocalypse is an extension of the Rebel Force game system. The major changes are in ranged, on-board and off-board, artillery, unit modes, and the introduction of river hexsides. During the computer setup phase the computer analyzes the rivers and bridges on the map and builds up a basic strategy for the scenario being played. Using this information it can quickly decide if an enemy unit is separated from a friendly unit by a river hexside and act accordingly.

Each infantry strength point represents about 40 men and each tank strength point about 3 tanks. The reorganization values used in the game do not mean that a unit increases in size (although this could occur as elements of eliminated units join the battalion) but that it increases its effective fighting strength. Elimination of a unit represents the loss of that battalion as an effective fighting unit during the battle. This occurred in practice with casualties of around 30%.

The next step will be the design of a historical WWII game incorporating multiple mapboards and less rigid stacking restrictions.

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You never thought your computer could be this exciting!